

AMENDMENTS TO THE SPECIFICATION

1. Please replace paragraph [005] with the following:

Hydrogen has long been recognized as an engine fuel offering interesting possibilities. On the one hand, hydrogen combustion produces very few hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO₂) because there is no carbon in the fuel. Rather, carbonaceous exhaust constituents arise from small amounts of lubricating oil participating in the combustion event. Hydrogen is thus a desirable fuel from an exhaust emissions standpoint. Because of its combustion characteristics, in particular its extremely lean flammability limit, it is possible to operate a hydrogen fuel engine at extremely fuel lean air/fuel ratios. For the purposes of this specification, discussion will be made of equivalence ratio, ϕ , which in common automotive parlance means the ratio of the stoichiometric air/fuel ratio to the actual air/fuel ratio. Accordingly, values of ϕ equivalence ratio less than one correspond to lean air/fuel ratios, and equivalence ratios greater than one correspond to rich air/fuel ratios. With a system according to the present invention, purging of an NO_x trap will occur at rich air/fuel ratios (i.e. $\phi > 1$) regardless of engine speed and load.

2. Please replace paragraph [013] with the following:

It is an advantage of a system and method according to present invention that hydrogen fuel may be used so as to exploit hydrogen's best characteristics by operating extremely lean to achieve maximum fuel economy except when regeneration of the lean NO_x trap is required, wherein the engine may be operated at a richer-than-stoichiometric air/fuel ratio with heavy EGR, which causes a reducing atmosphere ~~had to be~~ present at the front face of a lean NO_x trap, so as to allow excellent regeneration of the lean NO_x trap.

3. Please replace paragraph [015] with the following:

It is yet another advantage of the present invention that an engine operating according to the current system and method ~~may be~~ may be operated without the need for aftertreatment other than a NO_x trap.